

## CLAIMS

What is claimed is:

1. A temperature compensated variable tilt equalizer configured to operate over a defined frequency range, comprising:
  - (a) a radio frequency (RF) input for receiving an RF signal having a wide passband;
  - (b) an automatic temperature compensation circuit having an adjustable compensation range used to correct temperature-related tilt variances that occur on the passband of the RF signal over the defined frequency range; and
  - (c) a manual alignment circuit used to manually adjust tilt of the passband of the RF signal over the defined frequency range, wherein the variable tilt equalizer does not require a power source other than the RF signal.
2. The temperature compensated variable tilt equalizer of claim 1 wherein the manual alignment circuit includes a variable capacitor coupled to a variable resistor.
3. The temperature compensated variable tilt equalizer of claim 2 further comprising:
  - (d) a limiting circuit for limiting the range of the variable resistor in the manual alignment circuit to prevent extreme settings.
4. The temperature compensated variable tilt equalizer of claim 3 wherein the limiting circuit including a first resistor connected in parallel with the variable resistor of the manual alignment circuit, and a second resistor coupled in series with the first resistor and the variable resistor.

5. The temperature compensated variable tilt equalizer of claim 1 wherein the automatic temperature compensation circuit includes a negative coefficient thermistor having a resistance that varies with temperature to produce a correction for temperature-related passband tilt changes provided by the equalizer.

6. The temperature compensated variable tilt equalizer of claim 1 further comprising:

(d) a tuning circuit which is resonant at a frequency above the highest operating frequency of the equalizer, the tuning circuit producing a constant low loss at the highest operating frequency and an accurate response shape of the passband of the RF signal over the defined frequency range.

7. The temperature compensated variable tilt equalizer of claim 6 wherein the tuning circuit includes a fixed capacitor connected in parallel with a fixed inductor, one end of the tuning circuit being connected to ground and the other end being connected to the automatic temperature compensation circuit.

8. The temperature compensated variable tilt equalizer of claim 1 wherein the defined frequency range is approximately 47 MHz to 870 MHz.

9. The temperature compensated variable tilt equalizer of claim 1 wherein manual alignment circuit provides a manual passband tilt adjustment range of approximately 2.0 dB.

10. A temperature compensated variable tilt equalizer configured to operate over a defined frequency range, comprising:

(a) a radio frequency (RF) input for receiving an RF signal having a wide passband;

(b) an automatic temperature compensation circuit having an adjustable compensation range used to correct temperature-related tilt variances that occur on the passband of the RF signal over the defined frequency range;

(c) a variable resistor used to manually adjust tilt of the passband of the RF signal over the defined frequency range; and

(d) a limiting circuit for limiting the range of the variable resistor to prevent extreme settings, wherein the variable tilt equalizer does not require a power source other than the RF signal.

11. The temperature compensated variable tilt equalizer of claim 10 wherein the automatic temperature compensation circuit includes a negative coefficient thermistor having a resistance that varies with temperature to produce a correction for temperature-related passband tilt changes provided by the equalizer.

12. The temperature compensated variable tilt equalizer of claim 10 further comprising:

(e) a tuning circuit, which is resonant at a frequency above the highest operating frequency of the equalizer, producing a constant low loss at the highest operating frequency and an accurate response shape of the passband of the RF signal over the defined frequency range.

13. The temperature compensated variable tilt equalizer of claim 12 wherein the tuning circuit includes a fixed capacitor connected in parallel with a fixed inductor, wherein one end of the tuning circuit is connected to ground and the other end is connected to the automatic temperature compensation circuit.

14. The temperature compensated variable tilt equalizer of claim 10 wherein the limiting circuit includes a first resistor connected in parallel with the

variable resistor, and a second resistor coupled in series with the first resistor and the variable resistor.

15. The temperature compensated variable tilt equalizer of claim 10 wherein the defined frequency range is approximately 47 MHz to 870 MHz.

16. The temperature compensated variable tilt equalizer of claim 10 wherein variable resistor provides a manual passband tilt adjustment range of approximately 2.0 dB.

17. A temperature compensated variable tilt equalizer configured to operate over a defined frequency range, comprising:

(a) a radio frequency (RF) input for receiving an RF signal having a wide passband;

(b) a negative coefficient thermistor having a resistance that varies with temperature to produce a correction for temperature-related passband tilt changes provided by the equalizer;

(c) a variable resistor used to manually adjust tilt of the passband of the RF signal over the defined frequency range; and

(d) a tuning circuit, which is resonant at a frequency above the highest operating frequency of the equalizer, producing a constant low loss at the highest operating frequency and an accurate response shape of the passband over the defined operating range, wherein the variable tilt equalizer does not require a power source other than the RF signal.

18. The temperature compensated variable tilt equalizer of claim 17 wherein the tuning circuit includes a fixed capacitor connected in parallel with a fixed inductor, wherein one end of the tuning circuit is connected to ground and the other end is connected to the negative coefficient thermistor.

19. The temperature compensated variable tilt equalizer of claim 17 further comprising:

(e) a limiting circuit for limiting the range of the variable resistor to prevent extreme setting.

20. The temperature compensated variable tilt equalizer of claim 19 wherein the limiting circuit includes a first resistor connected in parallel with the variable resistor, and a second resistor coupled in series with the first resistor and the variable resistor.

21. The temperature compensated variable tilt equalizer of claim 17 wherein the defined frequency range is approximately 47 MHz to 870 MHz.

22. The temperature compensated variable tilt equalizer of claim 17 wherein variable resistor provides a manual passband tilt adjustment range of approximately 2.0 dB.